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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,938	07/08/2004	Gary W. Elko	1053.001B	1487
22186 7590 02/08/2007 MENDELSON AND ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102			EXAMINER LEE, PING	
			ART UNIT	PAPER NUMBER
			2615	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/500,938

Applicant(s)

ELKO ET AL.

Examiner

Ping Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,12-24, 27, 28, 31,42-53 and 63-75 are rejected under 35 U.S.C. 102(b) as being anticipated by Moorer (US006072878A).

Regarding claims 1, 12-14, 24, 27-31,42-45, 47-50, 69 and 70, Moorer discloses a method for processing audio signals, comprising:

receiving a plurality of audio signals, each audio signal having been generated by a different sensor of a microphone array (121,123, 125); and

decomposing the plurality of audio signals into a plurality of eigenbeam outputs (the end of col. 5), wherein each eigenbeam output corresponds to a different eigenbeam for the microphone array and at least one of the eigenbeams has an order of two or greater.

Regarding claim 15, Moorer shows the step of treating each sensor signal as a direction beam (col. 7, lines 60-65).

Regarding claims 16-18, 46, 51, 52, 63-66 and 75, the claimed auditory scene reads on the audio signal reproduced by a speaker.

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Regarding claims 19-22, 67 and 68, with the digital signal processing (col. 10, lines 17-27), the data is inherently stored for subsequent processing, or it reads on the recording medium.

Regarding claims 23 and 53, Moorer shows the equalizer filter (col. 6, lines 19-42).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2-9, 25, 26, 32-39 and 54-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer in view of Elko (US 6,041,127).

Regarding claims 3 and 32, Moorer fails to explicitly show an order of at least three. However, Moorer clearly teaches that the order  $n$  is related to the number of

speaker signals to be recorded/reproduced (col. 4, lines 13-18). The example provided in Moorer is five speakers, so order of two is sufficient. If a sound system having more than five speakers, it would have been obvious to one of ordinary skill in the art to modify Moorer's matrix to have the order of at least three in order to accurately represent the sound.

Regarding claims 2, 4-8, 33-38 and 54-59, Moorer fails to show that the microphones are mounted on an acoustically rigid sphere. Moorer teaches a general microphone array and the corresponding processor using spherical harmonics derived from the microphone signal. Elko teaches mounting the microphones on a rigid sphere (col. 1, line 65) to provide harmonic analysis. Thus, it would have been obvious to one of ordinary skill in the art to modify Moorer by mounting the microphones as suggested in Elko in order to improve surround sound recording and playback.

Regarding claims 25 and 26, Moorer fails to show calibrating the microphones. Moorer teaches using a general microphone array to derive the speaker signals based on the difference between microphones. Elko suggests calibrating the microphone to each other to improve the accuracy (col. 17, lines 1-25). Thus, it would have been obvious to one of ordinary skill in the art to modify Moorer by calibrating the microphones in the array in order to improve the response.

Regarding claims 9, 39 and 60, Moorer fails to show the locations of the microphones being elevated above the surface of the sphere. However, the microphones could be flush mounted on the sphere as taught in Elko, or other ways, such as above the surface to give a better coverage not limited by the flush mounted

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surface. Thus, it would have been obvious to one of ordinary skill in the art to modify Moorer and Elko by mounting the microphones above the surface in order to give the microphone a wider coverage.

6. Claims 10, 11, 40, 41, 61 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer in view of Elko as applied to claims 1, 2 and 4 above, and further in view of Staple et al (US005288955A).

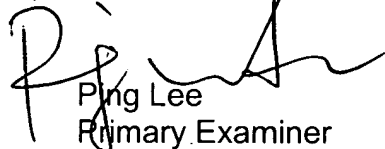
Regarding claims 10, 11, 40, 41, 61 and 62, Moorer fails to show the soft sphere. Elko shows the rigid sphere. Staple et al (hereafter Staple) teaches that the microphones are mounted on a soft sphere in order to reduce the vibration and noise. Thus, it would have been obvious to one of ordinary skill in the art to modify Moorer and Elko by mounting the microphones on a soft sphere in order to reduce the noise and vibration.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522. The examiner can normally be reached on Monday, Wednesday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Ping Lee  
Primary Examiner  
Art Unit 2615

pwl